

Questions and Answers
Endangered Species Act protects two Appalachian crayfish

Following a review of the best available science, peer review and public comment, the U.S. Fish and Wildlife Service has protected the Guyandotte River crayfish as endangered and the Big Sandy crayfish as threatened under the Endangered Species Act.

1. What are the ranges of the Guyandotte River and Big Sandy crayfish? Occurrence data, historical habitat characteristics, and information from species experts indicate that the Big Sandy crayfish's historical range likely included streams throughout the upper Big Sandy River basin, which covers 10 counties in Kentucky, Virginia, and West Virginia. However, the species is now restricted to six isolated subpopulations in the Upper Tug Fork, Upper Levisa Fork, Russell Fork, and Pound River/Cranes Nest in Pike and Floyd Counties, Kentucky; Buchanan, Dickenson, and Wise counties, Virginia; and McDowell and Mingo counties, West Virginia.

The historical range of the Guyandotte River crayfish included streams throughout the Upper Guyandotte River basin in Wyoming County and parts of Logan and Mingo counties in West Virginia. The best available information indicates that this species now exists in two streams in Wyoming County.

See maps at <http://www.fws.gov/northeast/crayfish/> or proposed rule for more information.

2. How many of these crayfish are left? While total population estimates are not available for either species, the best available information indicates that the overall numbers of both species typically found at each stream site has declined, as has the numbers of suitable habitat sites. Historical records and observations at the few remaining healthy sites indicate that about 20 to 25 individual crayfish could be expected to occupy a suitable site. However, surveys conducted between 2006 and 2015 indicate that few sites still harbor the species in such robust numbers. The Guyandotte River crayfish was last documented in 2015 in two separate streams. In Pinnacle Creek, the species was found at four individual sites, but in relatively low numbers. In the Clear Fork, the species was found at six individual sites and one in higher numbers.

3. What has happened to their habitat? Historical and ongoing erosion and sedimentation from mining, timber harvesting, unpaved roads, and off-road vehicle (ORV) use have degraded the majority of the streams in these crayfishes' historical ranges, making them unsuitable for the crayfishes' survival. Though coal extraction in the region has declined from the highs of the 20th century, ongoing and legacy effects of coal mining, including the erosion from closed and abandoned mine lands, are expected to continue. Other activities that may cause erosion and sedimentation, including natural gas development, highway construction, and ORV use, also are expected to continue or increase.

It also is likely that general water quality problems such as chemical drainage from mine lands, sewage discharges, and runoff from roads may continue to contribute to the decline of these species.

4. What other threats, besides habitat, make them vulnerable to extinction? The isolated, small populations of both crayfishes make them vulnerable to single catastrophic events like coal slurry spills or to ongoing activities that degrade habitat over time, either of which can wipe out crayfish populations. Suitable sites continue to be fragmented by dams and their associated reservoirs in the watersheds, reducing gene flow and making natural dispersal between sites highly unlikely or impossible without human intervention.

5. What kinds of public comment were submitted? Across two comment periods, we received comments from 42,015 individuals or organizations, of which 41,974 were form letters expressing support for the listing of the two species. We received comments from six expert peer reviewers, which, in general, all commented that we had thoroughly and accurately summarized the data, and some reviewers suggested other topics to analyze, such as climate change and dams. Substantive information was incorporated into the final rule.

While not substantive or adding new information, some commenters made requests that are not available through the Endangered Species Act listing process. A few companies representing mining interests indicated we should withdraw the proposed rule or postpone a final decision until we have more data, but the Endangered Species Act requires that decisions be made on the best available data at the time. Additionally, we responded to several commenters who expressed concern of potential economic impacts, and explained that while economic concerns cannot be considered as part of a listing decision, they would be factored into a proposed critical habitat designation.

See the listing rule for full responses to public comment.

6. Why is the Big Sandy crayfish's status threatened instead of the proposed endangered? The Service used the best available information to propose in April 2015 to protect both species as endangered. Recognizing that additional data would help inform the final decision, the agency funded additional surveys in the summer and fall of 2015 that covered the entire historical range of each species. The researchers visited 154 likely sites in the watershed and while the crayfish was confirmed at most previously known locations and one new site, they were found mostly in low numbers.

Additional new reports indicate that the crayfish is better distributed in quality habitat in the Virginia section of its range. While the crayfish has reduced populations and range, the best available information on threats indicates the species' status is threatened, rather than endangered.

7. Are conservation actions underway? What kinds of activities could help conserve these species? The Big Sandy crayfish is state-listed as endangered in Virginia and recognized as a species of concern in Kentucky, and the Guyandotte River crayfish is

considered critically imperiled in West Virginia per NatureServe criteria. Only the Virginia designation provides legal protections, which require projects within known Big Sandy crayfish habitat to include actions that reduce or eliminate effects to the species.

The species' habitats are afforded some federal protection under the Clean Water Act and the Surface Mining Control and Reclamation Act, as well as some protection from various other state erosion and sedimentation regulations and best management practices. While these regulations and best management practices help improve overall water quality, they have not been sufficient to alleviate the threats to these species.

The following activities can reduce threats to these species, potentially improving their conservation status:

- Drive ORVs and vehicles on designated trails and not through or in streams.
- Don't dump chemicals into streams, and do report spills to state environmental protection agencies.
- During timber harvest, construction or other projects, implement best management practices for sediment and erosion control.
- Start a watershed group or assist in stream and water quality monitoring efforts.
- Plant trees and other native woody vegetation along stream banks to help restore and preserve water quality.
- Replace or remove culverts and low-water bridge crossings that are barriers to passage for these species, fishes, and other aquatic organisms.

8. What is next? The Big Sandy crayfish's status as threatened allows the Service to consider tailoring Endangered Species Act (ESA) protections to those that are most important for the species' conservation. The agency plans to draft another rule under section 4(d) of the ESA that would incentivize proactive conservation efforts such as habitat restoration and the use of best management practices for forestry. Streamlining ESA compliance for activities that implement recovery actions or reduce impacts can accelerate recovery while lessening restrictions for landowners. A proposed 4(d) rule would be made available for public comment.

Additionally, the ESA requires the Service to review the species' range and identify areas where federal agencies should concentrate their conservation efforts. These areas are considered essential for the species' conservation and are called critical habitat. Designations have no impact on landowner activities that do not involve federal funding or require federal permits. The Service expects to propose critical habitat for both crayfishes for public review and comment later in 2016 after completing the required review of economic considerations.